

DRAWINGS ATTACHED

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- (21) Application No. 7616/70 (22) Filed 17 Feb. 1970
 (45) Complete Specification published 24 Nov. 1971
 (51) International Classification B 65 g 17/22
 (52) Index at acceptance
 B8A 1C4D1A 1H14
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(54) A CONVEYING DEVICE FOR SHEET MATERIAL

(71) We, SVECIA SILKSCREEN MASKINER AB, a Swedish body corporate, of Fittja Industriområde, Varby, Sweden, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to conveying devices for sheet material. The conveying device may be disposed inside a dryer for printed sheets, and may be connected to a silk-screen printing machine and be used to dry ink printed on to a sheet. The conveying device usually used in a said dryer comprises a plurality of conveying units succeeding each other in the conveying direction, and each said conveying unit comprises a plurality of endless belts disposed parallel to each other to provide a supporting surface for said sheet material.

The fact of the conveying device being formed of a plurality of conveying units causes difficulties when a sheet passes from one unit to the next. The belts of one unit run over one roller and the belts of the adjacent unit run over another, adjacent, roller, and thus a gap is formed between the units. When a sheet is to pass from one unit to an adjacent unit, it may tend to pass into the gap between the units instead of over it.

In order to eliminate this disadvantage, it has been proposed to dispose guiding bars between the two rollers so that the sheet may pass over the bars from one unit to the other. However, even if the bars have a polished surface in order to improve the passage of the sheets, there is a tendency, especially when the sheets are made of plastics and are heated in the dryer, for the sheets to stick to the bars.

The object of the present invention is to provide a conveying device whereby to ensure that the sheet material moves easily from one conveying unit to an adjacent conveying unit.

veying unit.

According to this invention a conveying device for sheet material, comprising a plurality of conveying units succeeding each other in the conveying direction, each conveying unit consisting of a plurality of endless belts disposed parallel to each other to provide a supporting surface for said sheet material, is characterised in that the assembly of belts of two successive conveying units at the adjacent ends of the said two conveyor units is constrained to run over at least three conveyor rollers all disposed with belt-engaging portions of their surfaces all in the same plane, and that some of the belts of one of said two conveying units at said adjacent ends overlaps some of the belts of the other of said two conveying units when viewed in the direction of the axes of said rollers.

One embodiment of the invention is shown in the accompanying drawings, in which:—

Fig. 1 is a plan view of parts of two successive conveying units; and

Fig. 2 is an end elevation looking in the direction of the arrows II-II in Fig. 1.

The conveying device comprises a plurality of units succeeding each other in the conveying direction, the adjacent ends of two such successive units, 1 and 2, being shown in the drawings. Each conveying unit comprises a plurality of endless belts disposed parallel to each other transversely of the unit. The unit 1 comprises belts 1a-1e, whilst the unit 2 comprises belts 2a-2e. The belts 1a and 2a are in line with each other in the direction of travel of the belts indicated by the arrows P in Fig. 1, and the belts 1b and 2b, 1c and 2c, 1d and 2d, and 1e and 2e are similarly in the line with each other.

At the junction of the two conveying units 1 and 2 there are three rollers 3, 4 and 5, parallel to each other and with their top

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surfaces, which will be engaged by the belts, all in one plane.

In each assembly of two in-line belts of the two units 1 and 2, the belt of one of the units runs on two adjacent rollers in the assembly of three rollers 3, 4 and 5, and runs around the centre roller 4, whilst the other belt of the assembly of two in-line belts runs around the third roller of said roller assembly.

However, only transversely alternate belts of one unit run on two adjacent rollers, the remaining belts of that unit running on and around only the roller of said two adjacent rollers which is outermost in the assembly of three rollers. Thus, as shown in the drawings, the belts 1a, 1c and 1e run on the rollers 3 and 4, whilst the belts 2b and 2d run on the rollers 4 and 5, all of the said belts 1a, 1c, 1e, 2b and 2d running around the roller 4, whilst the belts 1b and 1d run only around the roller 3 and the belts 2a, 2c and 2e run only around the roller 5. Thereby the gaps between pairs of in-line belts are staggered across the conveying device, that is, the gaps between belts 1b and 2b, and 1d and 2d are disposed between the rollers 3 and 4, whilst the gaps between belts 1a and 2a, 1c and 2c, and 1e and 2e are disposed between the rollers 4 and 5.

As can be seen in Fig. 2, the gaps between in-line belts of the two succeeding conveying units 1 and 2 do not disturb the flow of a sheet 6 (Fig. 2) along the conveying device. Thus, when the leading edge of the sheet 6 (shown in Fig. 1 to be carried by the belts 1b, 1c and 1d) is over the gaps between the belts 1b and 2b and 1d and 2d, the said edge will be supported by the belt 1c and will be carried smoothly on the belts 2b and 2d. Similarly, when the said edge of the sheet is over the gap between the belts 1c and 2c it will be supported by the belts 2b and 2d, and will be carried smoothly on to the belt 2c.

The rollers 3, 4 and 5 may each be provided, at the positions occupied by the belt, with a camber rib or other elevated surface portion which extends circumferentially of the roller, whereby to effectively position the belts thereon.

The conveying device may be modified within the scope of the appended claims.

The conveying device may be disposed inside a dryer for printed sheets, and the

dryer may be connected to a silk-screen printing machine.

WHAT WE CLAIM IS:

1. A conveying device for sheet material, comprising a plurality of conveying units succeeding each other in the conveying direction, each conveying unit consisting of a plurality of endless belts disposed parallel to each other to provide a supporting surface for said sheet material, characterised in that the assembly of belts of two successive conveying units at the adjacent ends of the said two conveying units is constrained to run over at least three conveyor rollers all disposed with belt-engaging portions of their surfaces all in the same plane, and that some of the belts of one of said two conveying units at said adjacent ends overlap some of the belts of the other of said two conveying units when viewed in the direction of the axes of the said rollers.

2. A conveying device according to claim 1, wherein there are three said rollers at the adjacent ends of two successive conveying units, each belt of one of the said two successive conveying units is in line in the direction of conveyance of sheet material, with a belt of the other of said two conveying units, and one of each pair of two in-line belts runs over two adjacent rollers whilst the other of said pair of in-line belts run over the other of said three rollers.

3. A conveying device according to claim 2, wherein in each of said two adjacent conveying units, alternate belts, transversely of the unit, run over two adjacent rollers in the assembly of three rollers whilst the remaining belts in the unit run over only the roller of said two adjacent rollers which is outermost in the assembly of three rollers.

4. A conveying device according to any one of the preceding claims, characterised in that it is disposed inside a dryer for printed sheets, and the dryer is connected to a silk-screen printing machine.

5. A conveying device for sheet material, substantially as described herein and shown in the accompanying drawings.

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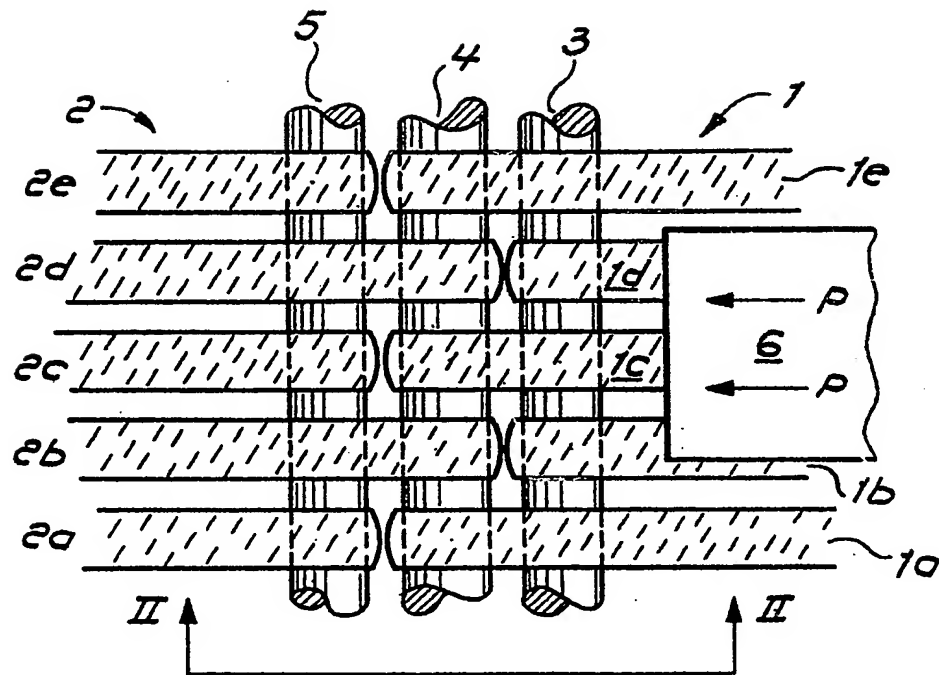


Fig. 1

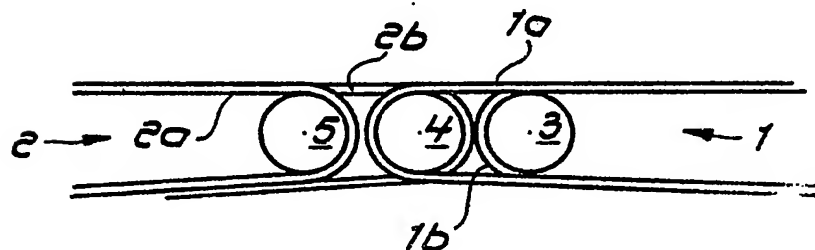


Fig. 2